

Worksheet: Expanding Expressions

Expanding Expressions

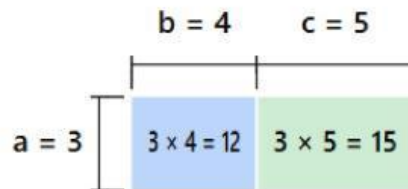
Expanding an expression means **removing parentheses** by using the **Distributive Property** and then **combining like terms** (if necessary).

The distributive property says:

$$a(b + c) = ab + ac$$

$$3(4 + 5) = 12 + 15 = 27$$

$a = 3$ is the shared height; $b = 4$ and $c = 5$ split the width. The colored areas 12 and 15 add to 27.



Steps for Expanding Expressions

1. Multiply the number outside the parentheses by **every term** inside the parentheses.
2. Remove the parentheses.
3. Combine like terms if possible.

Example 1

Expand:

$$4(x + 3)$$

Multiply 4 by each term:

$$4 \times x = 4x$$

$$4 \times 3 = 12$$

Answer:

$$4x + 12$$

Example 2

Expand:

$$5(2y - 4)$$

Multiply 5 by each term:

$$5 \times 2y = 10y$$

$$5 \times (-4) = -20$$

Answer:

$$10y - 20$$

Example 3

Expand and simplify:

$$3(x + 4) + 2x$$

Expand and simplify:

$$3x + 12 + 2x$$

Combine Like Terms:

$$5x + 12$$

Answer:

$$5x + 12$$

Example 4

Expand first:

$$-2(3m - 5) + 4m$$

Expand:

$$-6m + 10 + 4m$$

Combine Like Terms:

$$-2m + 10$$

Answer:

$$-2m + 10$$

Part A – Expand the Expressions - Expand each expression.

1. $3(x + 5) =$ _____

2. $6(y - 2) =$ _____

3. $4(a + 8) =$ _____

4. $7(b - 3) =$ _____

5. $5(c + 6) =$ _____

6. $2(4x + 9) =$ _____

7. $8(3m - 2) =$ _____

8. $9(2n + 5) =$ _____

9. $4(5p - 7) =$ _____

10. $6(3q + 8) =$ _____

Part B – Expand and Simplify

11. $3(x + 4) + 5x =$ _____

12. $4(y - 2) + 3y =$ _____

13. $2(5m + 6) - m =$ _____

14. $6(n + 1) + 2n =$ _____

15. $5(a - 3) + 4a =$ _____

16. $7(2b + 4) - 3b =$ _____

17. $8(c - 5) + c =$ _____

11. $9(2d + 1) - 5d =$ _____

Part C – Negative Numbers - Expand and simplify.

19. $-3(x + 6) =$ _____

20. $-4(y - 5) =$ _____

21. $-2(3m + 7) =$ _____

22. $-5(4n - 2) =$ _____

23. $-6(a + 3) + 2a =$ _____

24. $-7(2b - 4) - b =$ _____

25. $-8(c + 5) + 3c =$ _____

26. $-9(3d - 1) + 4d =$ _____